THE OUTBREAK OF CHOLERA IN THE PHILIPPINES IN 1905.

THE METHODS USED IN COMBATING IT, WITH STATISTICS
TO JAN. 1, 1906.

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According to the official records on file at the Bureau of Health for the Philippine Islands, the last case of cholera of the pandemic which commenced March 20, 1902, was reported to have occurred March 8, 1904. During that period 166,252 cases, with 109,461 deaths, were reported. Reliable observers are of the opinion that at least one additional case occurred for each one that found its way into the official records.

From March 8, 1904, until Aug. 23, 1905, no cases are known to have occurred. From time to time during this latter period suspicious cases, which clinically resembled Asiatic cholera, came to the attention of the Insular Board of Health, but the diagnosis could not be confirmed bacteriologically. For the two weeks immediately preceding August 23, the number of suspicious cases increased. In Manila, one occurred in San Pedro Macati, a suburb; one in a bakery in Paco; one in the San Miguel district; one case was that of a soldier in Cuartel de España, and several in the province of Rizal. The cases in Manila were all carefully examined postmortem, and the intestinal contents subjected to bacteriologic tests by such competent observers as Dr. R. P. Strong of the Government laboratory, and his assistants; and the case of the soldier was carefully investigated by the military medical authorities, and specimens examined at the Army laboratory which is maintained in connection with the First Reserve Hospital of Manila. From both of these independent sources the results were reported as negative.

THE FIRST RECOGNIZED CASE.

On August 23 a case developed in Bilibid prison which was a typical clinical picture of cholera. After a few hours the victim succumbed. At the postmortem examination the ileum was found to be deeply injected and filled with rice-water-like material, and the bacteriologic examination made by Dr. R. P. Strong revealed the cholera spirillum of Koch. Thus occurred the first officially recognized case of cholera of the present outbreak.

This patient was in an institution which is practically cut off from the remainder of the world; where all food-stuffs are permitted to enter only after the most rigid inspection, and where all food served, that could possibly convey cholera, is cooked at all times. On account of dysentery, it is said that all drinking water was sterilized. Therefore, it would seem that the routine precautions taken against dysentery should also have afforded protection against cholera. The commencement of an outbreak in this insidious manner was most puzzling, and the prospects of combating a disease whose origin was so obscure were not encouraging.

On the following day six cases, suspicious of cholera, were reported by Major Wales, from Fort William McKinley, which is located about seven miles up the Pasig River, from Manila. For the week preceding August 23, about eight cases, with profuse diarrhea and vomiting followed by collapse, had occurred at the fort. The symptoms were the same as those usually found in vino poisoning which is so common among the United States

soldiers in the islands, and in the absence of any cholera being reported anywhere in the Philippines, there was no particular reason for investigating the cases further. In view of the fact, however, that the diagnosis of some of the later cases that occurred at the fort was bacteriologically confirmed, the earlier diagnoses of vino poisoning may not have been correct.

The military medical men at once commenced active measures, and the comparatively few days during which the cholera persisted at the fort is another excellent example of how readily the disease can be eradicated when sanitary principles are intelligently applied.

On August 25 an American woman residing at the Grand Hotel, in the walled city, was attacked, and died in a few hours. On the same day an American residing on San Sebastian Street, in a section of the city nearly two miles from the previous patient, was seized and died several hours afterward. No connection could be traced between the two cases, nor could any history be obtained that the same articles of food, which would be likely to convey the infection, had been eaten by these two victims.

Cases in Manila occurred as follows:

TABLE 1.

August 23.....	2	September 1.....	17
August 24.....	1	September 2.....	12
August 25.....	3	September 3.....	27
August 26.....	8	September 4.....	18
August 27.....	10	September 5.....	12
August 28.....	6	September 6.....	10
August 29.....	9	September 7.....	8
August 30.....	5	September 8.....	7
August 31.....	7	September 9.....	4
		September 10.....	3

From this period the cases averaged about one a day until the end of the year; the total cases, from Aug. 23 to Dec. 31, 1905, inclusive, being 255.

The characteristic tendency of the outbreak continued during the early weeks of the scourge, viz.: No connection could be traced between the cases; no two cases occurred in any one house, nor did two cases occur in any one group of houses. A case almost invariably occurred in a section of the city far distant from a previous case, and furthermore, it will be noted that the next case did not occur in the same section until the likely incubation period had expired. Another especially noteworthy feature about the outbreak is that while the greatest number of cases occurred in the slum district, this section of the city was not infected until during the latter part of the outbreak.

At the commencement of the epidemic of 1902, cases in Manila were reported as follows:

TABLE 2.

March 20.....	4	March 30.....	11
March 21.....	6	March 31.....	6
March 22.....	4	April 1.....	17
March 23.....	8	April 2.....	4
March 24.....	14	April 3.....	13
March 25.....	15	April 4.....	13
March 26.....	12	April 5.....	9
March 27.....	11	April 6.....	11
March 28.....	6	April 7.....	9
March 29.....	5		

By comparing this table with Table 1, it will be seen that at the end of the second week there had actually been more cases during the outbreak of 1905 than during that of 1902.

In the meantime, a telegram received August 26 from Jalajala, province of Rizal, through the Army Medical Department, contained the following information:

Cases of a disease resembling cholera have developed in Jalajala, the first case being registered on the 21st; from that

date to the 25th, 16 cases and 12 deaths have been registered, the illness lasting from twelve to twenty-four hours.

On August 26 another telegram, received from the president of the Provincial Board of Health at Pasig, reported one suspicious case followed by death, in that town. A representative of the Insular Board of Health, and another from the Bureau of Government Laboratories, proceeded at once by special launch to Pasig and Jalajala, for the purpose of investigating the cause of the outbreak in these places. The result of this investigation did not shed any light on the origin of the infection. Inquiry made by the inspectors only resulted in showing that at least one week prior to August 23 more deaths had occurred in Jalajala than usual, and that the victims had profuse diarrhea and died a few hours after the symptoms manifested themselves.

An investigation made by Dr. L. T. Hess, captain and assistant surgeon, United States Army, of the records on file at Muntinlupa and Biñan, situated in Rizal and Laguna provinces, respectively, and on the opposite shore of Lake Laguna from Jalajala, showed that death certificates had been filed during the week preceding August 23, for a number of cases (less than 12), in which the cause of death was given as "suspicious diarrhea."

The following table will show the order in which other towns in the provinces became infected and the number of cases up to Jan. 1, 1906:

TABLE 3.

Town and Province.	Date of first case.	To January 1, 1906.	
		No. of Cases.	No. of Deaths.
1. Jalajala, Rizal	Aug. 20	28	18
2. Guadalupe, Rizal	Aug. 24	1	1
3. Taguig, Rizal	Aug. 25	68	51
4. Pasig, Rizal	Aug. 27	59	47
5. Santolan, Rizal	Aug. 28	1	1
6. San Pedro de Macati, Rizal	Aug. 28	4	4
7. Taytay, Rizal	Aug. 29	132	115
8. Guagua, Pampanga	Sept. 1	37	26
9. Indang, Cavite	Sept. 1	1	1
10. San Mateo, Rizal	Sept. 2	16	12
11. Malabon, Rizal	Sept. 2	53	50
12. Bulacan, Bulacan	Sept. 4	12	8
13. Sangley Point, Cavite	Sept. 5	1	1
14. Pasay, Rizal	Sept. 5	1	1
15. San Felipe Neri, Rizal	Sept. 5	1	1
16. Pila, Laguna	Sept. 7	7	6
17. Cavite, Cavite	Sept. 7	22	20
18. Paranaque, Rizal	Sept. 8	1	1
19. Santa Rosa, Laguna	Sept. 11	9	8
20. Marikina, Rizal	Sept. 13	4	3
21. Binangonan, Rizal	Sept. 16	60	29
22. Morong, Rizal	Sept. 16	186	116
23. Antipolo, Rizal	Sept. 17	56	35
24. Meycauayan, Bulacan	Sept. 23	1	1
25. Los Banos, Laguna	Oct. 2	19	14
26. Imus, Cavite	Oct. 3	159	116
27. San Francisco de Malabon, Cavite	Oct. 5	12	11
28. Carmona, Cavite	Oct. 6	1	1
29. Caloocan, Rizal	Oct. 13	4	2
30. Lucban, Tayabas	Oct. 12	4	4
31. San Pablo, Laguna	Oct. 18	1	1
32. Binan, Laguna	Oct. 16	111	92
33. Pagsanjan, Laguna	Oct. 20	3	2
34. Paete, Laguna	Oct. 21	3	0
35. Naic, Cavite	Oct. 21	48	45
36. Bay, Laguna	Oct. 22	1	1
37. Santa Cruz, Laguna	Oct. 23	41	37
38. Majayjay, Laguna	Oct. 24	15	10
39. Cabuyao, Laguna	Oct. 28	2	2
40. Calamba, Laguna	Oct. 31	64	43
41. Hagonoy, Bulacan	Nov. 1	197	130
42. Noveleta, Cavite	Nov. 1	77	40
43. Macabebe, Pampanga	Nov. 6	9	7
44. Magdalena, Laguna	Nov. 6	4	3
45. Lilio, Laguna	Nov. 8	20	16
46. Nagcarlang, Laguna	Nov. 9	1	1
47. Tanauan, Batangas	Nov. 20	10	6

The cases and deaths in the city of Manila, from August 23 to December 31, were distributed by age as follows:

TABLE 4.

Age.	Cases.	Deaths.	Mortality.
Under 30 days	0	0	...
1 to 2 years	3	3	100.0
2 to 5 years	20	20	100.0
5 to 10 years	14	14	100.0
10 to 15 years	14	11	78.6
15 to 20 years	23	17	73.9
20 to 25 years	33	28	84.8
25 to 30 years	33	28	84.8
30 to 35 years	42	38	90.2
35 to 40 years	24	19	79.2
40 to 45 years	18	17	94.4
45 to 50 years	8	8	100.0
50 to 55 years	11	11	100.0
55 to 60 years	1	1	100.0
60 to 65 years	6	6	100.0
65 to 70 years	0	0	...
70 to 75 years	1	1	100.0
75 to 80 years	1	1	100.0
80 to 85 years	1	1	100.0
Unknown	2	2	100.0

The number of cases of cholera that occurred by race, between Aug. 23, 1905, and Dec. 31, 1905, and the date of the last case, are shown in Table 5. Table 6 shows the classification of cases by occupation.

TABLE 5.

Race.	Cases.	Deaths.	Mortality, per cent.	Ratio of 1 Case to	Date of Last Case.
Americans	11	6	54.0	339	Oct. 10
Filipinos	220	200	90.9	862.6	Dec. 31
Chinese	4	4	100.0	5307.5	Oct. 8
Foreigners	20	16	80.0	227	Nov. 8

TABLE 6.

Occupation.	Filipinos.		Americans.		Japanese.		Chinese.		Foreign.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Barber	2	..	..	..	..	..	..	..	..	..
Blacksmith	1	..	..	..	..	..	..	..	..	..
Boatman	1	..	..	..	..	..	..	..	..	..
Buttonmaker	..	1	..	..	..	..	..	..	..	..
Carpenter	4	..	..	..	1	..	..	..	..	..
Cigarmaker	2	1	..	..	..	..	..	..	..	..
Clerk	2	..	1	..	..	..	..	..	..	..
Coachman	2	..	..	..	..	..	..	..	..	..
Collector	1	..	..	..	..	..	..	..	..	..
Cook	1	..	..	..	..	..	..	..	..	..
Domestic	..	2	..	..	..	..	..	..	..	..
Draughtsman	1	..	..	..	..	..	..	..	..	..
Dressmaker	..	5	..	..	..	..	..	..	..	..
Electrician	1	..	..	..	..	..	..	..	..	..
Fireman	1	..	..	..	..	..	..	..	..	..
Fisherman	2	..	..	..	3	..	..	..	..	..
Gardener	..	..	..	..	..	..	1	..	..	..
Hotelkeeper	..	..	1	..	..	..	..	..	..	..
Housekeeper	..	5	..	..	..	..	..	..	..	..
Janitor	1	..	..	..	..	..	..	..	..	..
Journalist	1	..	..	..	..	..	..	..	..	..
Laborer	14	..	1	..	4	..	2	..	..	..
Laundress	..	9	..	..	..	..	..	..	..	..
Mason	..	..	..	..	..	..	..	..	..	..
Merchant	1	..	1	..	..	..	..	..	1	..
Messenger	1	..	..	..	..	..	..	..	..	..
Milkman	1	..	..	..	..	..	..	..	..	..
Painter	1	..	..	..	..	..	..	..	..	..
Policeman	1	..	..	..	..	..	..	..	..	..
Prisoner	29	..	..	..	..	..	..	..	..	..
Religieuse	..	1	..	..	..	..	..	..	..	..
Sailor	5	..	1	..	..	..	..	..	1	..
Silversmith	1	..	..	..	..	..	..	..	..	..
Soldier	1	..	..	..	..	..	..	..	..	..
Stonecutter	1	..	..	..	..	..	..	..	..	..
Student	4	..	..	..	..	..	..	..	..	..
Tailor	1	..	..	..	..	..	..	..	..	..
Teamster	..	..	..	..	..	..	..	..	..	..
Tendera	..	3	..	..	..	..	..	..	..	..
Trader	..	..	..	..	..	..	1	..	1	..
Water vender	1	..	..	..	..	..	..	..	..	..
Unknown	9	31	..	..	3	..	..	..	..	..
Children	20	28	1	..	..	..	..	..	..	..
Total	114	86	5	1	11	..	4	..	5	..

From Table 5 it will be seen that in proportion to their number, more foreigners (Japanese and Europeans) contracted cholera than any other nationality; that the

Americans ranked next, but had the lowest death rate, and that the least number occurred among the Chinese. The mortality of 100 per cent. among Chinese may be attributed to the fact of the very few cases that occurred, and that those patients who recovered probably escaped detection by the health authorities. That no further cases occurred among Americans after October 10 was probably due to the fact that as soon as they believed the disease to be actually present, they observed the prophylactic measures against cholera more strictly.

The high percentage of Americans and Europeans attacked may also be more apparent than real, because it is quite probable that all those persons of this race who were attacked promptly sought medical advice and thus were reported, while among the natives and Chinese, in all probability cases occurred in which the patient recovered, and thus were not reported.

In Table 7 is given the death rate per thousand for Manila, for all diseases, for the years 1903 and 1904, in which no cholera was reported. The death rate for the same months in 1905, during which period 250 deaths from cholera were reported, is also given:

TABLE 7.

	1903		1904		1905	
	Number of Deaths.	Annual Death Rate per 1000.	Number of Deaths.	Annual Death Rate per 1000.	Number of Deaths.	Annual Death Rate per 1000.
August	862	46.17	1032	55.28	841	45.03
September	1228	67.97	1064	58.89	1013	56.06
October	1217	65.19	1018	54.53	850	45.51
November	974	53.91	957	52.97	944	52.24
December	894	47.89	794	42.53	841	45.03
		281.13		284.20		243.87
Average		56.22		56.80		48.77

From the above table it will be seen that the death rate for the years in which no cholera was reported was actually higher by more than 8 per thousand than in 1905, when cholera was reported. The death rate is of particular importance, in view of the fact that an increase in the general mortality has been almost universally accepted as being a strong factor in indicating that deaths from communicable diseases were occurring. Many epidemiologists who have written on this subject in the past have laid especial stress on the fact that when a sudden increase in the death rate for a community takes place, it should be regarded with suspicion, and the possibility of a dangerous communicable disease being present, should be considered.

THE SOURCE OF THE INFECTION.

It will now be interesting to consider whether or not the infection was introduced from without, and in this connection it will be important to ascertain in what other nearby countries cholera was present at the time it made its appearance in the Philippine Islands.

Manila is in active communication, by direct steamship lines, with the following Oriental ports: Yokohama, Kobe, Nagasaki, Moji, Shanghai, Amoy, Hong Kong, Saigon, Singapore, Rangoon, Calcutta, Madras and Bombay, and indirectly, with Sourabaya and few other Javanese and Bornean ports. Examination of the official sanitary statistics received from the ports mentioned discloses the fact that cholera was present in an isolated manner in the country back of Kobe, Japan; in Cal-

cutta and in Bombay. In the case of the two last mentioned ports, the sailing time to Manila by the most direct steamers is at least nine or ten days from Calcutta, and at least fifteen days from Bombay. The fact that the incubation period is only five days, that no sick were found on any of these vessels, and that, from laboratory experience, it has been ascertained the class of vegetables and other cargo which come from these ports will not serve as media for the growth of the cholera bacilli for a greater period than five days, shows that for practical purposes these two ports may be dismissed from further consideration. At any rate, the only importations from India are rice, onions, potatoes, textiles, ivory goods and other articles not at all likely to convey cholera organisms.

No cholera was reported in Hong Kong, and none was known to exist in Canton, but in view of the fact that the actual status of the public health in Canton is not well known at any time, that place can not be excluded with any degree of positiveness. The time from Canton to Manila, by way of Hong Kong would be at least from four to five days, but in view of the fact that only onions, potatoes, garlic and such other vegetables as are necessarily forwarded in a dry state, were shipped from these ports, it is not likely that cholera organisms could have been introduced with them; furthermore, since Canton vegetables are used freely aboard vessels which entered the Philippines from Hong Kong, and since no sick were found on these vessels, it is reasonable to exclude that port from the list of places likely to have been the cause of the introduction of the infection.

The records show that from Kobe a number of vegetables were shipped, but they consisted principally of onions and potatoes, and a very small amount of cabbage. The vessels that arrived from that port for the month preceding the outbreak of cholera in Manila did not have any cases aboard which were in any way suspicious of cholera. In view of the fact that cabbage is the only vegetable which could possibly have been the cause of the introduction of cholera, and since at least five days is consumed in the voyage, and more time must necessarily have elapsed before it could have been placed on the market, and since experiments made in the laboratory of the Public Health and Marine-Hospital Service show conclusively that cholera organism can not be kept alive on cabbage for longer than five days, this method of the introduction of the infection may also be excluded. The only other articles which are open to suspicion, imported from Kobe, Japan, are classes of food peculiar to the Japanese, and which are not eaten by other nationalities. Many of these consist of vegetables in a fermented state, which in itself precludes the probability of cholera organisms existing therein; and furthermore, since no Japanese persons are known to have been attacked in the city of Manila until the disease was present at least five days, and after more than 25 cases had occurred among other nationalities, it is not likely that the infection can be ascribed to Japanese food products.

From the foregoing it will be observed that so far as the records show, at least, it is not likely that the infection gained entrance into the Philippine Islands from without. Of course, there is always the possibility that cholera organisms may have been present in the intestines of an incoming passenger, but in view of the fact that the first cases known to have occurred were in persons known to have been in the islands many weeks immediately previous, and also, that they were not per-

sons likely to ingest foreign food, this last contingency would also seem remote.

FIGHTING THE EPIDEMIC.

In mapping out a campaign for the suppression of the disease, the work was divided into four parts:

1. Isolation of the sick in the cholera hospital, and the rigid disinfection of their houses and effects.
2. The protection of the city water supply, including the closing of wells located in the city of Manila.
3. Prohibition of the sale of foodstuffs likely to become contaminated, and the proper protection, with fly screens, of the remainder.
4. The education of the public in the precautions to be observed in order to avoid the disease.

The carrying into effect of the isolation of the sick, and their treatment at the cholera hospital, was so well organized as the result of the experience gained in the former epidemic that this particular feature worked very smoothly; but in other respects the work was attended with considerable difficulty on account of the strong antipathy of the Filipinos to be treated elsewhere than in their homes.

The native daily papers took the matter up and drew a vivid pen picture of the mental agony that would be endured by the relatives and friends of those who should be unfortunate enough to be stricken with cholera, and separated from them by being compelled to go to the cholera hospital. The direct effect of the publication of such articles was that many cases were concealed, and just so many infected centers remained undiscovered. The newspaper attacks were borne patiently, and constant endeavors made to show prominent Filipinos and the representatives of the press the magnificent manner in which the cholera hospital was equipped, and how much the chances of recovery from an attack were increased by hospitalization, and the fact was particularly pointed out of the great injustice done to the patient by depriving him of these increased chances for recovery. Fortunately, a number of well-known citizens recovered at the cholera hospital about this time, which had the effect of at least silencing the critics, after which the work of isolation was carried on with much less hindrance and with ever-increasing effectiveness.

To the American press of Manila too much credit can not be given for the manner in which it pointed out the danger that existed in concealing cases.

No attempt was made to quarantine "contacts," nor was any attempt made to institute a land quarantine at any place in the islands. This was a radical departure from the manner in which, in 1902, the campaign against cholera was conducted. The infection was followed from center to center; the sick were isolated, and every practicable measure was taken to destroy the infection and thus to prevent its spread. It is believed that this method was of more value than an attempted quarantine would have been, as the latter would necessarily have had to be too despotic to have been of any permanent value. The policy was to educate rather than to antagonize, and what has been lost in some respects has been more than compensated for in others.

By comparing the disease during this epidemic, with that of the previous one, it will be seen that the disease actually spread more slowly this time than before. To quarantine effectually the infected area in and around Manila, not to mention the provinces, would have required from 30,000 to 50,000 armed men, and unless this quarantine had been made effective, it would have

been useless. The cost of maintaining such a quarantine, in the salaries for guards and delays and losses to business, would have been enormous.

It may be contended that the infection this time was milder in character, and for that reason did not spread, but when it is remembered that the mortality was over 90 per cent., and that nearly all the victims succumbed in a few hours after the first symptoms appeared, and that almost without exception the disease spread rapidly unless prompt disinfection was done, it will be seen that this contention has very little basis in fact.

The beneficial effect of not alarming the populace, and thereby causing a great emigration from the centers in which the disease appears, can scarcely be overestimated. By the plan followed, cases of cholera, instead of being carried far and wide in every direction, were confined largely to Manila, where the patients could be promptly isolated and the necessary disinfection performed; the consequence of which, of course, was that there was little danger from the spread of infection in such cases.

The one idea that was kept constantly in mind was to so arrange the inspection system that the disinfectors could reach the cases in the shortest possible time. The disinfection was made as simple as possible, and strict instructions issued that nothing must be destroyed or damaged, with the exception of the prepared food which was found in the houses; the stools of the patients and the places where they were thrown and the clothes which they soiled were diligently sought for and thoroughly disinfected with a 1 to 1,000 solution of bichloride of mercury, or a 5 per cent. solution of carbolic acid. The floors and walls were thoroughly saturated with the same solution, by means of a pump.

All containers in which water was stored, as, for instance, water coolers, earthen jars, filters, barrels, wells, etc., were treated with potassium permanganate. "Contacts" were required to take an antiseptic bath. The disinfecting carts were used in much the same way as the apparatus of a fire department. The horses were kept hitched up, night and day, and as soon as a case was reported, the disinfectors reached the infected house a few minutes later. The fact that no second case occurred in any house shows most effectively how efficiently the disinfection was done.

PROTECTION OF WATER SUPPLIES.

A few days after the outbreak of cholera in Manila, a few isolated cases of the disease were carried to the water-shed from which Manila obtains its drinking water. These cases probably came from Taytay, a small town in Rizal province, located near the water-shed. The importance of properly guarding the water supply of a city of 219,000 inhabitants will be readily appreciated. Arrangements were promptly made for sending an adequate patrol to the Mariquina Valley, to prevent the pollution of the water. Through the courtesy of the Commanding General of the Philippines Division, four troops of the Eighth Cavalry were promptly ordered to the valley, and remained there until long after the time that the last case of cholera was reported. The water-shed is inhabited by about 10,000 persons, and from time immemorial it has been their custom to bathe and wash in the Mariquina River, from which the Manila water supply is drawn. To deprive them, suddenly, of this privilege produced great opposition among the people, and made it difficult for effective work to be done. For that reason, to the American troops great credit is due on account of the great patience which they exer-

cised. The fact that the river was not polluted, although many cases of cholera occurred immediately along its banks, shows most conclusively how effectively the troops carried out the duties to which they were assigned.

As an additional protection, during the time that the cholera on the water-shed was at its height it was deemed advisable to place a sufficient amount of copper sulphate in the city reservoirs to make a solution of 1 to 2,000,000. Subsequent experiments made at the laboratory with the regular city water, however, showed that a solution of at least 1 to 50,000 would be required to kill cholera organisms with certainty in thirty minutes' time. As this would be unsafe for drinking purposes, for continual use, it is of course obvious that cholera organisms can not be successfully removed from the public water supply of Manila by the use of copper sulphate.

In the city of Manila there still remain a great many wells which, ostensibly, are used only for the purpose of sprinkling streets, washing carriages and other uses; but the danger is always present that they will be used for drinking purposes, and for that reason an order was issued which directed the closing of all wells in the city of Manila.

After the large city mains were protected, and the wells were closed, it could almost be said with certainty that no large epidemic could take place in the city of Manila, and this proved to be the case.

PROHIBITION OF THE SALE OF FOODSTUFFS AND PROTECTION BY FLY SCREENS.

For one who has never seen the local native markets, it will be difficult to understand the great variety and kinds of foodstuffs that are offered for sale, and the ideal culture media which they offer for cholera organisms. Among them are snails, fish of various kinds, crabs and other shellfish, cooked vegetables, etc. There are also many green vegetables which, of necessity, must be continually watered in order to keep them in a fresh condition. The great amount of handling by prospective customers, which all the foods in the public markets receive, makes it clear that they are likely at any time to become contaminated by persons who are either in the incubation stage of cholera or have come in contact with infected material.

The chewing of the betel nut has long been under suspicion as being perhaps the most common manner by which cholera is propagated and continued in the Philippine Islands. The betel is prepared for chewing by extracting the kernel from the nut, which is from 5 to 8 centimeters long, with a diameter of 2 centimeters. The outer cover of the nut is a thick husk, comparable to that of the green walnut or butternut of the United States. The kernel, when extracted, is cut into discs, each of which is wrapped with a piece of moist green buyo leaf. It is in this leaf that the danger is supposed to lurk.

In order to keep the leaves in good condition, they are kept in an earthen pot and thoroughly sprinkled with water every few hours. As new supplies of the leaves are received at the markets, the old water that accumulates in the bottoms of the vessels is not always replaced with fresh water. Each prospective buyer of the buyo leaf usually fingers all the leaves that are found in the pot in order to find those which are most tender. In this way the buyo leaves in a given vessel are probably handled by different persons many times each day before they are finally disposed of, and if there is any cholera

in the neighborhood it is quite easy to conceive how, sooner or later a person who has cholera organisms on his or her fingers, will come in contact with the buyo leaves. To prevent the sale and use of the betel nut and this buyo leaf is probably one of the most difficult things which the Bureau of Health had to attempt. Confirmed betel-nut chewers are almost as insistent on having their chewing material as the average opium habitué is in obtaining his supply of opium, and they will go to every possible trouble and risk to obtain it.

Street peddling was entirely forbidden. The sale of fruit that grows well above the ground, as, for instance, those fruits grown on trees, exemplified by bananas, cocoanuts, mangoes, etc., was not interfered with to any great extent. These fruits, fortunately, are not handled very much by prospective buyers, before being bought, and, therefore, are not likely to become contaminated. Some of the cheaper articles, which are absolutely indispensable to the poorer classes, were permitted to be sold, provided the shopkeeper agreed to keep the product under fly screens, and to prevent intending purchasers from handling the same.

With the aid of the police, these regulations were fairly well carried out, and perhaps aided considerably in preventing the spread of the disease.

THE EDUCATION OF THE PUBLIC IN THE PRECAUTIONS TO BE OBSERVED IN ORDER TO EVADE THE DISEASE.

Education of the public was probably the most important work that was done by the Bureau of Health, and the success in controlling the outbreak was no doubt largely due to the co-operation which was given.

In order to place something practicable before the public, something which required very little expense, trouble or knowledge to carry out, the following rules were printed in the newspapers and then issued in the form of a handbill, in English, Spanish, Tagalog, Ilocano, Viscayan, and other native dialects:

1. Boil all drinking water and place it while hot in covered vessels. Do not dip up the water when needed, but pour it into drinking cups, otherwise cholera germs may get into the water from the hands.
2. Do not touch drinking water or food with the hands unless they have just been washed in water that has been boiled.
3. Eat only cooked food. Avoid all fruits, raw vegetables, and raw fish. Dried fish may be made safe by thoroughly heating. Fruits may be made comparatively safe by dipping them a few seconds into boiling water.
4. Flies may carry cholera germs on their feet from human excreta to food; therefore, to protect it from flies, cover all food immediately after it is cooked.
5. If cholera appears, build smudges under houses to drive flies away.
6. Boil all water used for diluting milk.
7. Cook all meats and fish thoroughly so as to heat the same throughout.
8. Keep kitchen and table dishes thoroughly clean and scald them before using.
9. Keep the place in which you live, the ground under the house, and everything pertaining to it, clean.
10. Outhouses, closets, and vaults can be made safe by putting in lime or carbolic acid. When this can not be done dejecta must be buried or thoroughly covered with earth.
11. Isolate all the sick. It is recommended that a house in each barrio be set aside for this purpose.
12. All the dead should be embedded in lime and buried three feet under the surface.
13. Filth or vomit and the dejecta of the sick should be promptly cleaned up with boiling water and buried.

14. Clothes and bedding used by sick persons must be either burned or boiled. Do not wash any clothes near wells or springs, nor permit surface water to run into any well or spring.

15. Municipal presidents and municipal councilors should enact these rules as ordinances, and see that they are enforced.

16. All school children are requested to inform their parents of these rules, which, if observed, will prevent great loss of life.

The Bureau of Education sent these circulars to every school teacher in the islands, with instructions that the rules should be taught to all pupils so that they could recite them, and then the pupils were requested to repeat them to their parents. The Archbishop of the Catholic Church of the Philippine Islands sent the circulars to every priest, with instructions that they should explain their contents to their parishioners. The Aglipay Church and other denominations did the same. Very large flaming red cardboard posters, with the rules printed in several languages, were posted in the postoffice, municipal buildings, and other public places throughout the islands. Later, a more advanced cholera circular was prepared for the use of teachers. The information contained in these later circulars enabled many teachers to cope successfully with the disease when it made its appearance in the small towns at which they were at work.

Many thousands of Filipinos soon learned that they could easily avoid contracting the disease. How different was this picture from that presented in 1902, when only fatalistic indifference was shown, and the only measures taken by the natives themselves consisted in nightly religious processions. With the exception of a few instances, in districts in which dense ignorance prevails, these latter are scarcely ever encountered. The number of persons who boiled their drinking water was astonishing.

CONCLUSIONS.

1. From the evidence obtainable at this time, it is impossible to state whether the cholera was reintroduced into the Philippines, or remained here in some latent form for the year and a half during which no cases were detected.

2. While there is no evidence to show that the disease spreads by other means than that of enteric fever, yet the rapidity with which it makes its appearance in many widely separated places, puts it in an entirely different class, so far as combating it successfully is concerned.

3. Maritime quarantine can practically insure the prevention of its spread by sea.

4. It is practically impossible to make a land quarantine effective, hence, it is useless to engender the opposition with which it is usually met, and the time and money required by such a quarantine, will yield much better results when put to the education of the public in the manner in which the disease spreads.

5. The education of the public is a much more effective measure in its suppression than methods requiring force in their application.

6. In order, finally, to make serious outbreaks of cholera in the Philippines impossible it will be necessary to replace the present insanitary water supplies with artesian wells, or others sources from which infection by surface drainage can be avoided, or to correct it by filters or other means where it does occur.

Strychnin in Shock.—Dr. Graeme H. Hammond, New York, states that whatever the effect of strychnin in surgical shock, it is absolutely injurious in psychic shock.

CEREBRAL SYPHILIS IN CHILDREN.*

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In part, this paper is based on the study of somewhat over 100 cases of undoubted syphilitic cerebral disease in children from the literature. A large number of other cases, undoubtedly of similar character, have been excluded merely because unequivocal evidence of syphilitic infection was wanting, or postmortem examination had not been made.

The paper is really a consideration of hereditary cerebral syphilis, but it is thought best to employ the broader title in deference to the opinion of certain well-known observers who believe that many cases of syphilis developing late in childhood are instances of acquired and not of congenital infection.

A study of a large number of cases from the literature does not indicate that there is much ground for this belief. Certainly, the great majority of the cases are undoubted instances of inherited disease. There is no reason, however, why cerebral symptoms of presumptive specific character, appearing late in childhood, may not in fact be the so-called "tertiary" phenomena of a specific infection acquired in earlier years. So far as the symptoms and the clinical interest of the affection are concerned, it makes but little difference when the infection occurred. It is with the fact of the frequency of cerebral syphilis in childhood and with the interesting clinical and pathologic manifestations of the disease that we have to do rather than with the question of the manner of infection.

It is not possible to obtain an adequate conception of the relative frequency of this affection in the period of childhood, by judgment based on the space devoted to the subject in the text-books. It is a field of research as yet almost unexplored in special pediatric literature, but one which as time goes on will be recognized as of the greatest interest and of far-reaching importance.

That the subject is deserving of a special chapter in pediatrics is evinced by the large number of instances of the affection to be found in the literature, and by its unquestionable relation to other and very common affections in childhood, not usually regarded as of specific nature.

When we consider the frequency of these other conditions in childhood, and the probable specific character of many of them the entire subject assumes a position of the foremost importance in the study of disease in children, and may justify a brief study of the subject and the placing on record of a grouped and condensed summary of some of the cases.

The words of Fournier,¹ in his treatise, page 422, may well be repeated as preface to any consideration of the subject:

Avec les affections du système nerveux nous allons aborder un chapitre des plus importants de notre programme, et je puis ajouter des moins connus.

In the consideration of this affection we must study first the clinical phenomena in each case; second, the probable character of the morbid changes in the central nervous structure, responsible for these phenomena.

There are three pathologic conditions in the brain, which, singly or in combination, may be responsible for

* Read in the Section on Diseases of Children of the American Medical Association at the Fifty-seventh Annual Session, June, 1906.
1. Fournier: Syphilis Héritaire Tardive, 1886.